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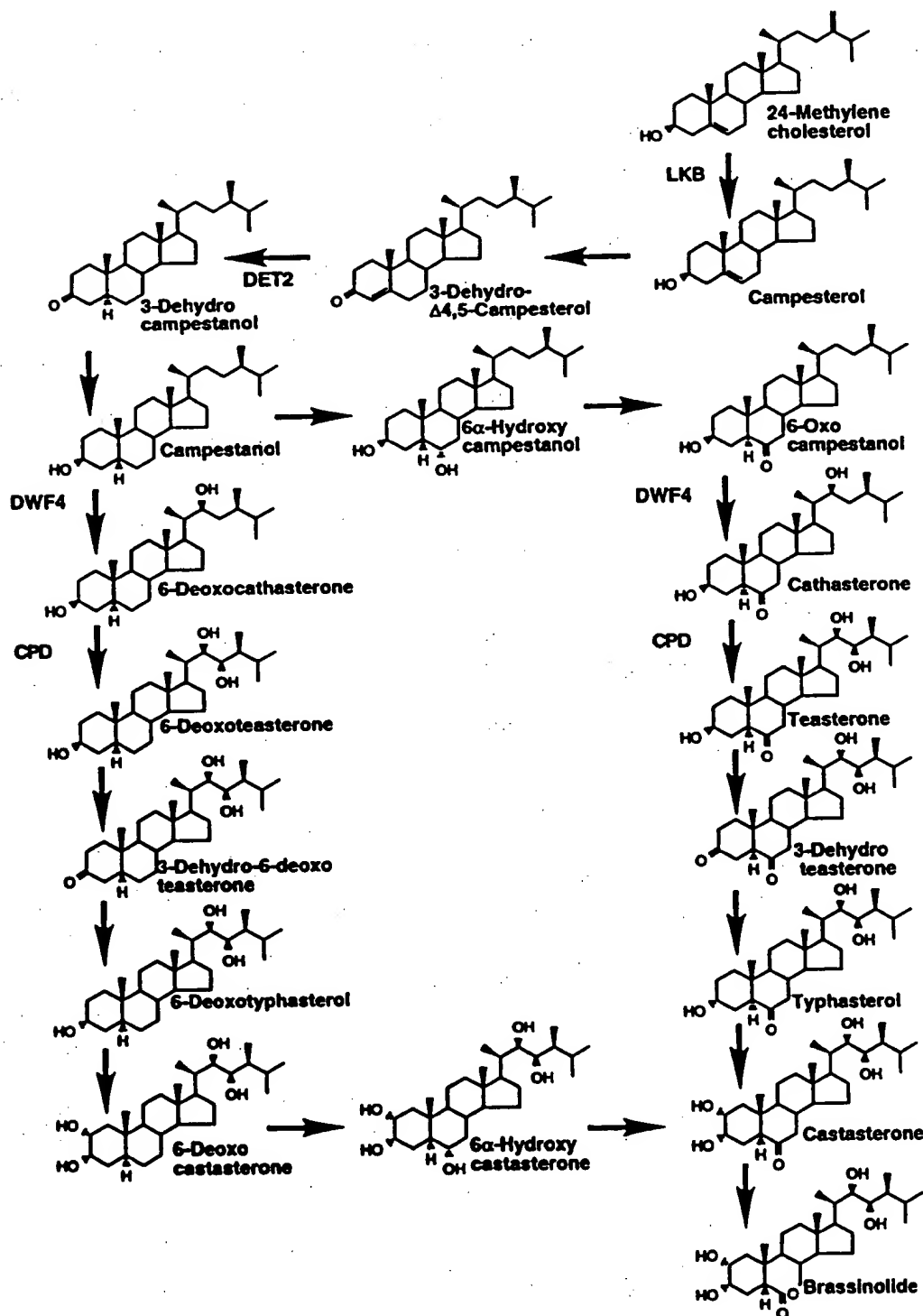


FIG. 1

Diagram illustrating the structure of the *dwf4-1* gene. The gene is 350 bp long. The ATG start codon is at position 1. The TAA stop codon is at position 2908. Restriction sites for EcoRI, HindIII, BamHI, EcoRV, SalI, and HindIII are indicated. A large arrow points to the T-DNA insertion site at position 2003.

B) Domains and Mutations

The diagram illustrates the domain structure of the Dwf4 protein. Key features include:

- Anchor** (hatched box) near the **MET (1)** start.
- Proline** (hatched box) near the **1542** position.
- Domain A** (dotted box) containing the mutation **dwf4-3 W289Z**.
- Domain B** (checkered box).
- Domain C** (striped box).
- Heme binding** (shaded box).
- Heme binding** (hatched box) near the **Stop (514)** end.

FIG. 2

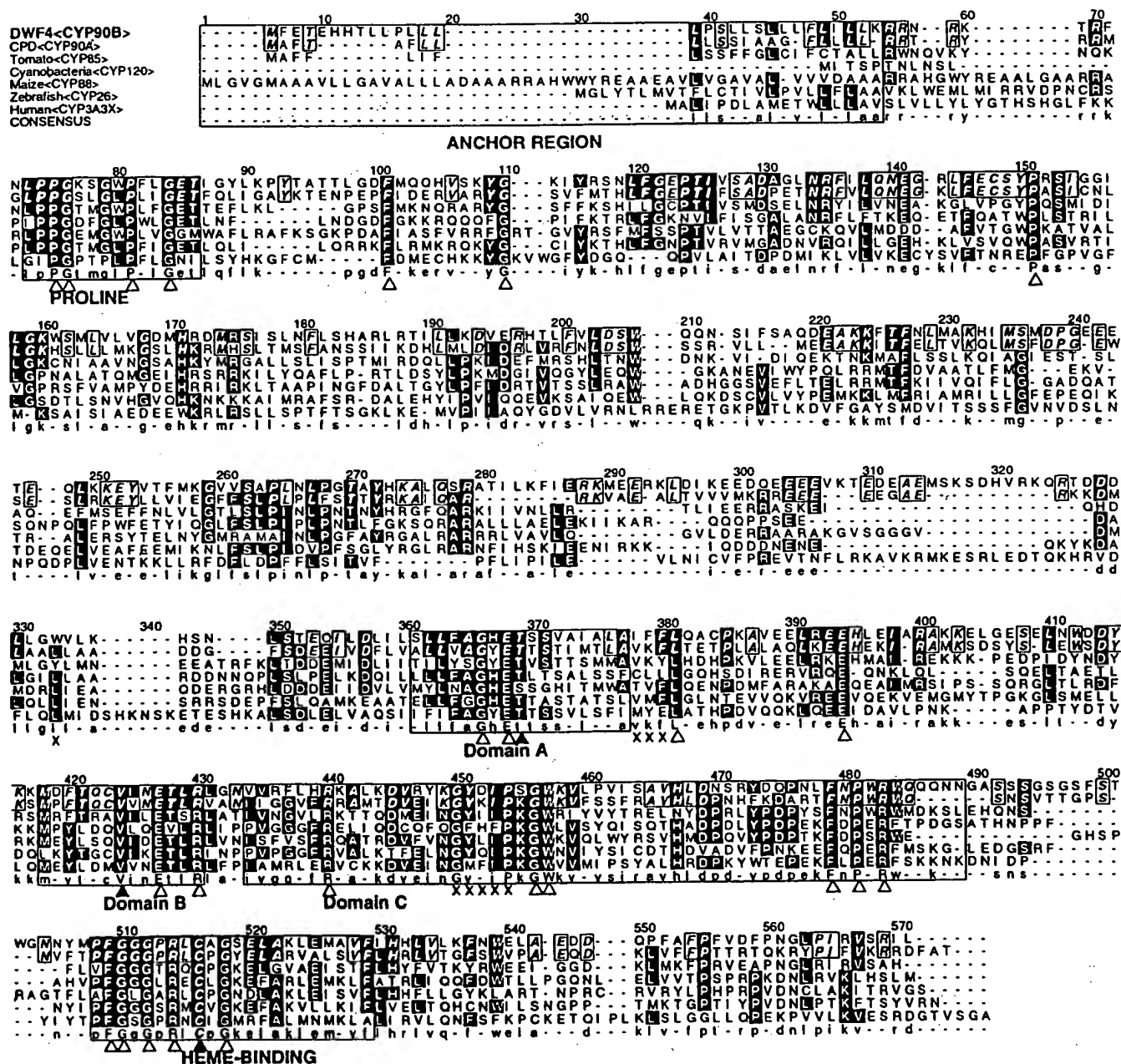


FIG. 3

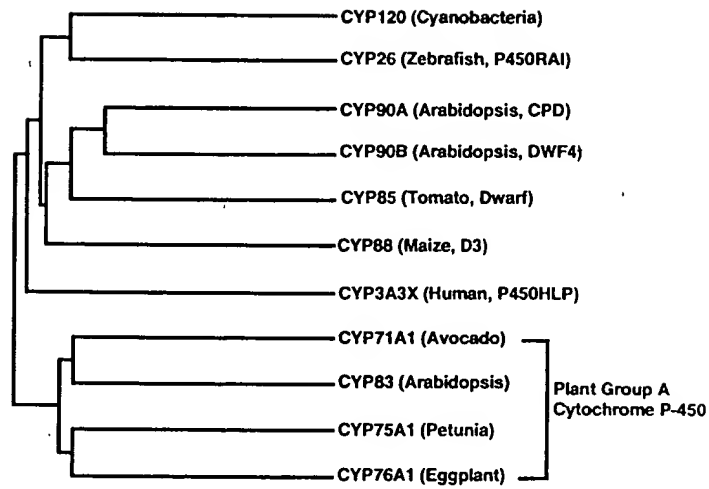


FIG. 4

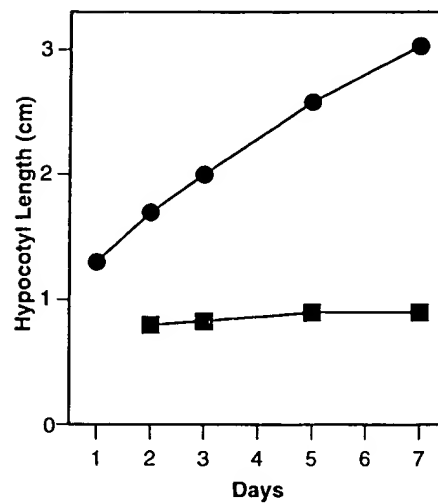


FIG. 5

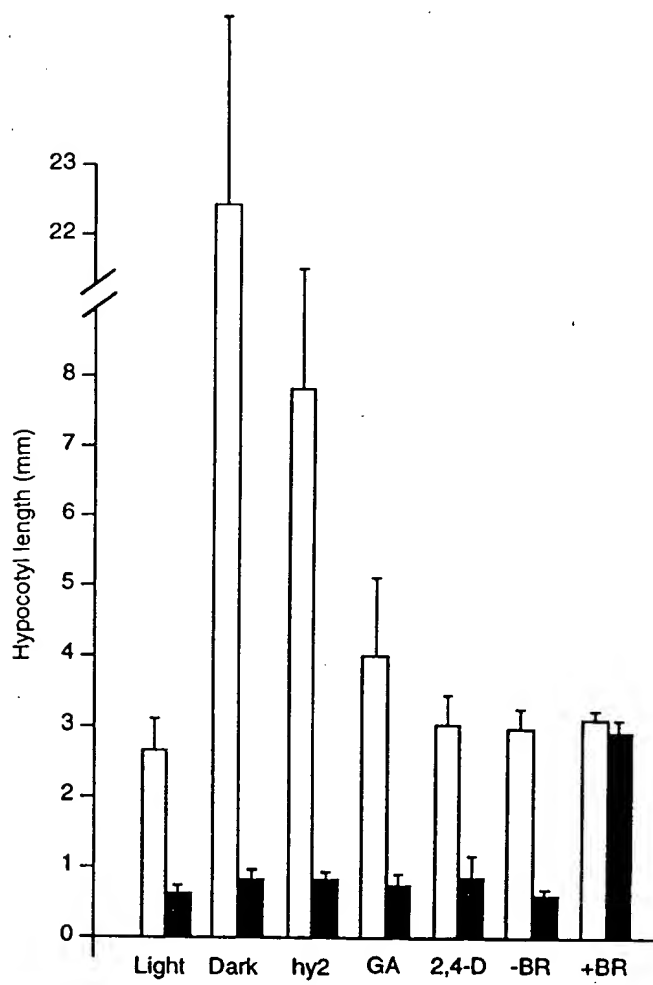


FIG. 6

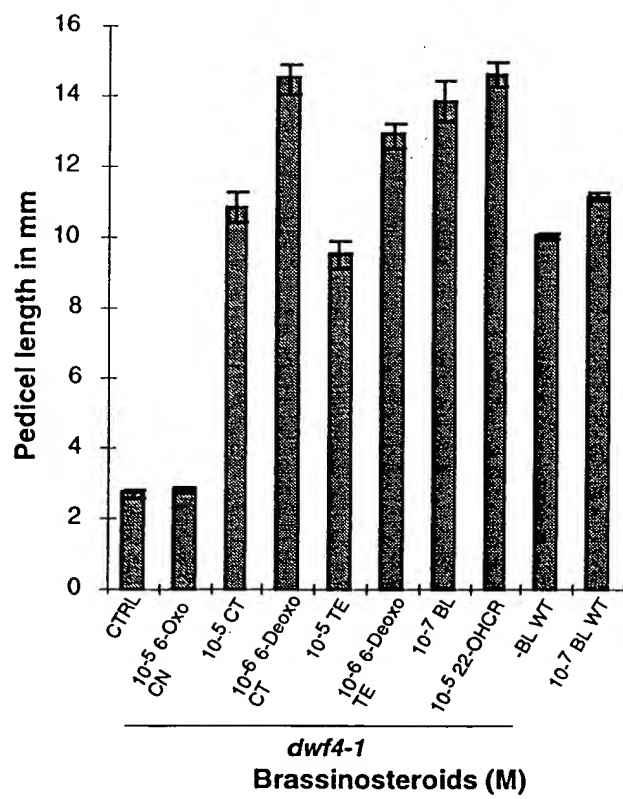


FIG. 7

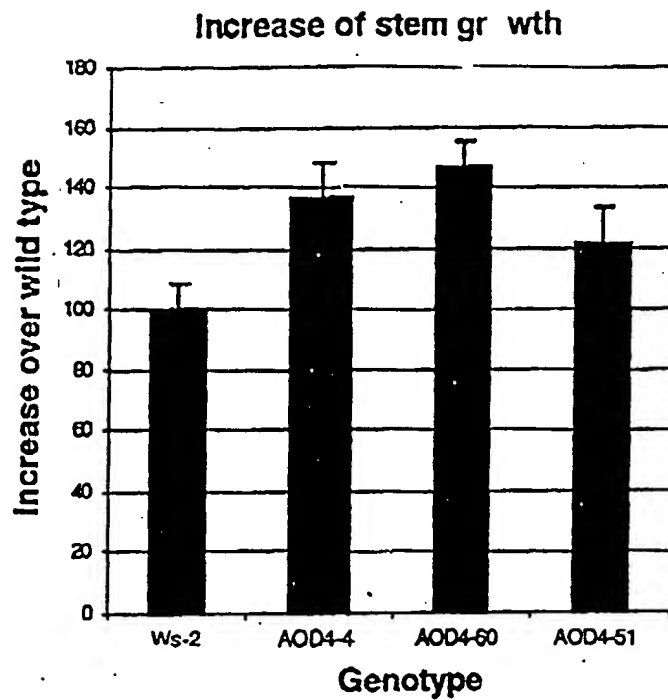
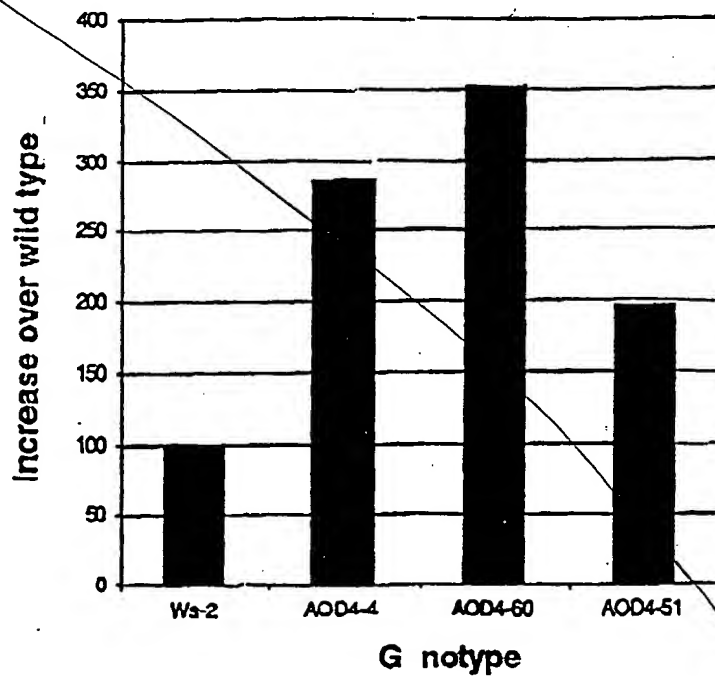


FIG. 8

Increased seed production due to DWF4 overexpression



Cancelled and
replaced with substitute
figure 9, submitted
03/07/03.

Am
5/6/03

FIG. 9



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Increased seed production due to DWF4 overexpression

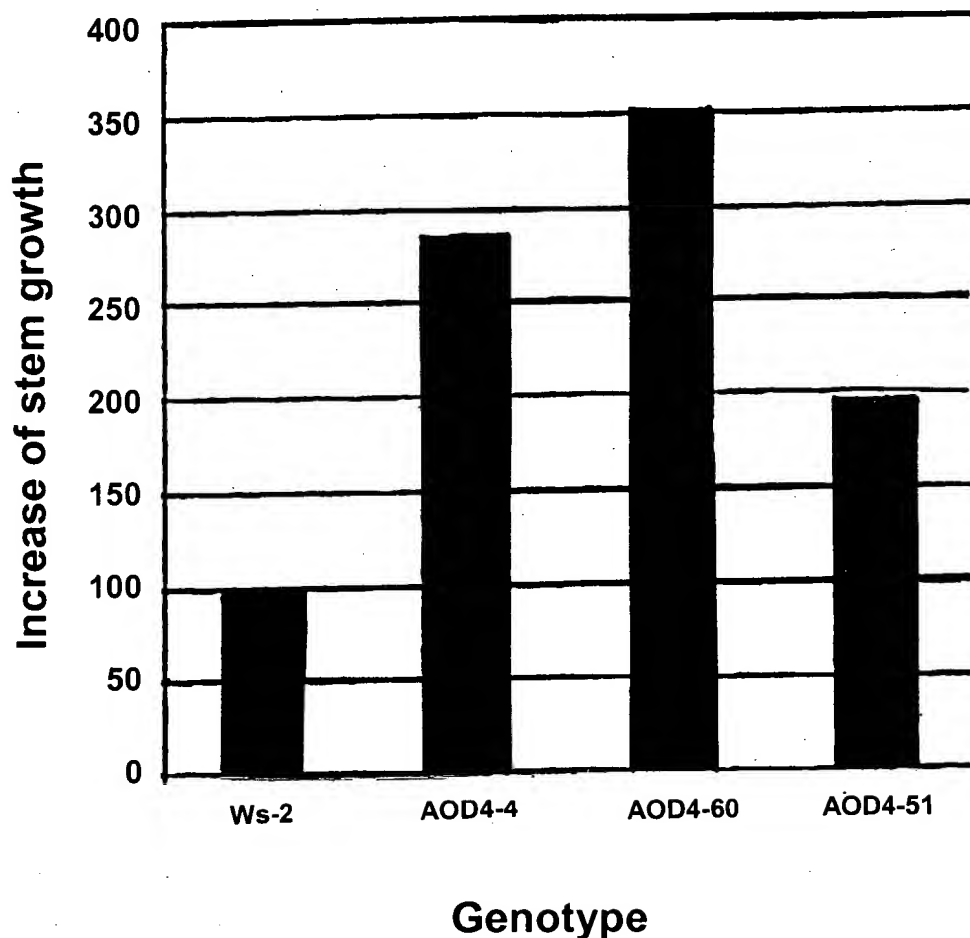
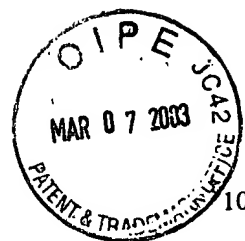


FIG. 9



1 ATGTGGGTATTATATTGTTGGGTTCGGTTTGAGCTACAATATAAAATTCGTGTTTCTGGT 60
61 TATTCTGTTACATGATTTGAGTTTGGTTCTCAATTTGGATTCCAAGATAATTAAATATT 120
121 AAAATTCATTTAAAATATTTACAAGTAATTAATTATCTTTACATTGTATTGTTATAACAA 180
181 AATATCTATCTTTGGTATATGAGAAAATATGGAGTTTGAATTATAATAATAAGGAAA 240
241 TAATCGATTCCATTTGGTTGGATTACACAGTTAAGTTTTTGTGTTTCTTTTGTATATGT 300
301 ATATGAGTAAATCAAAAAGAGTATTGATTGAAGTGTAACATATTCGTTATGACCCCCA 360
361 AAAAAAAAAAAAAACAAACAAACAAACCCCCCCCCCGATATAGTTTTTGGTTCTGGATT 420
421 AGGTTTATTTGATCATAATTACATGCATCATTCTTTGATTACTATGAAGATTTTCTTAC 480
481 CAATTAATAATTCGAATTCATATCTCTTGATTATTAAATTAATAACGAGTGTGAATATCC 540
541 GTTTATCGATCACTCCAATCATGATTATGATTCTTGTGCTAATCCAGCAAATTATTAACA 600
601 AGAGTATTGAGAAAAAACCGAAAAATAAGAAAAGGGAAAGAGTAGTGACCCATGGAGTATG 660
661 TGAATAATTATCAAAGAGAATAAGAGATGACAACCAAAAGGTTGTGGAATAATGGTCCCT 720
721 GCCAGCTTTCTCTCACAATCAATATCGACCCTATTTGGATTTTCTGGATATTCGTTAAAA 780
781 TTTGCGATAACGATTGTGAAAAATATTTTATTTGTTAGCTGATCTCAATATTATGTTCCA 840
841 GGTATTTGCATAATCTTCTGTTTAAAGCATATTTTGTCTTTCTTTTGTTCGTTTCTCT 900
901 TAACTATATATTATCGCGGATATATGATAACAATGATATATCACAAAACAATTGTCTGGG 960
961 ACCATTTTGAATAAACTTTTTCTCAAACATTACGGGACACTGGACTCGACCCTTAAATA 1020

FIG 10A



1021 CGATTTTACAGCGTCACTAGTTGAGATTACTAGCATAAAGCATAAAGGACCCGTTCAAGC 1080

1081 TATTTATACAAAGTTACAACTGAATATAGCTTGAAATCCTTTAGAAAATTTTGGAATTA 1140

1141 CCGGTTGTTATGTAAATATAGATTTAGTGGTAAACAAATATGTTAATCAATTAGTGGTCA 1200

1201 ACATATACATAATTCCTTACAGAAAAACAACTTAAGAGAAGTTAACATATCCATATAT 1260

1261 GGGTATGCTATACCTTTCACGTATGCTATACTAGAGACTAAAGAATAGTTATGTGATGTC 1320

1321 GATAAATGAAATTCACACGCGTGGTAATAATTATGGGACCGTATGTTACGATCACTGCAA 1380

1381 ATATCATTCTTGGTTGGTCAACAATAAAAAACAAAAACAAGAAAAAAGAAAACGATTTTT 1440

1441 CTTGGATTCCATTCAATGATCTAAAATGCATAGATCTTTTGGGTTACAGTTTCGAAGTCC 1500

1501 TCTACAAGCGTGTAACCATCTGCAACTATTAAATTGCTTTCTTTAATGCATCTTTAACAT 1560

1561 ATTTATTGTTAGTTGGAATTTAATAAGAGCGAACTTGTAACATTACAATATTTATATTAG 1620

1621 ATACTAGTATGTGATTATTCCAAATACATACTTTGGATGTTTAACTTAATCTTGTTTCT 1680

1681 TCCTACGGTATAAATATTAATCATCGAGGTAAAAAAGTTTTGTCTTATTTTCGCGATGC 1740

1741 ATGAAGGATAAACCTAATGACTTTAATTTTTTGAAAATGTAACCCTTTTACTCATAGATT 1800

1801 AATTACCGTATGTTTTTGTGTCATAATGACAGCCTCTACAACTGTGATAGTCAATTTTT 1860

1861 TCTGCAAATATTAAATTAGGAATTCAATGCTACTATCAATAGAAGAAACAGCTGAGTATT 1920

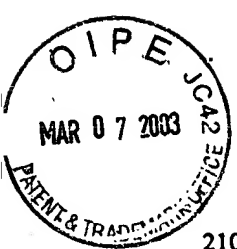
1921 ACATTTTAATTTAAAGACAAAATTTTTGAAAAATGTTATAATTTCTAACAATATTATTAA 1980

1981 AATATGATGCCTATAATGTATTTCTATGTTCTTAAAAATTTTTTTTTTATTTTAGTTA 2040

2041 TAAATACATTATGAACCAATAATAGTTGGTGAATTCAAATATCTCCATTAATTTTTTTTG 2100

FIG 10B

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2101 AAATCTACAAATTATTAATATTTAGTCAATAACAATGCATAGAAAGTTCCAAAAAAATT 2160
2161 TTGTTAACAGAACTTCCAAATTTTTTTTTTTTATGGAACAAGAAATAACAGATAGAAAA 2220
2221 CTATTTTGTGTGGAATGGAAGTAGTAATATACATTAAGCAAATTTTAAAAAATTATATA 2280
2281 AGCCTATACGCGCTCAAAGTATGTTATCTAGTAGGTGTAATTAATAATGCATGGTGCGAT 2340
2341 TCAGAATTGGGACAACAATGAAAACGGAATTAATAATTAACCTTTAAAAATAAATAAAAAAT 2400
2401 TTGAGTAAATGTGTTTTCTGACTATTGAGGGGCAAAAAAAGACAATGCCAAAAGTCTAC 2460
2461 GGGTTTGACTGTCCAGTTCGGTAATAATCTAATAACTCTGTCTTTGACCGCACGCTCGTG 2520
2521 TAGGGGTCCTTCTGACATTTTCACTGTTCTACCCCTACTCGTGAGCCACCCCTTTTCCCA 2580
2581 TATCCTAAGGGTAATTTTGGAAATCCCAATTTAAACCGATTGAGACCGTACCGGACTTCC 2640
2641 TGGGATTCTGCTGGAGCATTTATCAAAAATTATTAGCACGAATGGGTTTATTAATTTAAA 2700
2701 AACTCACAACCTTGATCAGATAAAATTTTATAAACACTTTTACGATGGATTCTGATCGATCT 2760
2761 ATCTAATGACTTTTTTTTTTCTACCACGGTGGATGAAAGTTATAGTACTATTAGCCAGAG 2820
2821 ACAATTGATTATAGATATATCCATTAATCCATGATATTTATGATATAAATAGCTGTAAA 2880
2881 CTATTTTCAGCATCGCAGCTTTCTGCAACTTTTGTTTTTAATTTAAGAGTTTAATAAATAA 2940
2941 AAGTATTAAGGAGCATAACGAGGCAACAAAAGTAATGAACACGGAGAAACAAAAGCCA 3000
3001 TGAAGCTCATTGGTTAGTTTAAGCTTAATAAGAAGATTTTATTAATTTTAATGACGATG 3060
3061 ATAACAATTATATTTTCTGACTTCTTTAAACCCCTCTTACAAACAGAAGCTCCCTTTT 3120
3121 TCAGTAGAAGTCCGATTCCCAATCTTAAAGACAAAGCCATTAGAAAGAGAAAGTGAGTGA 3180

FIG 10C

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3181 GAGAGAGAGAGAACTAGCTCCATGTTTCGAAACAGAGCATCATACTCTCTTACCTCTTCT 3240

exon 1

3241 TCTTCTCCCATCGCTTTTGTCTCTTCTCTTCTTGAAGAGAAGAAATAG 3300

3301 AAAAACCAGATTCAATCTACCTCCGGGTAAATCCGGTTGGCCATTTCTTGGTGAAACCAT 3360

3361 CGGTTATCTTAAACCGTACACCGCCACAACACTCGGTGACTTCATGCAACAACATGTCTC 3420

3421 CAAGTAAACAACAACATCTTCCAAAACTCAAAAAATAAATCCTCTGTTTTTGAAATTT 3480

3481 GACTAATGTTGTTTATTTTACAGGTATGGTAAGATATATAGATCGAACTTGTTTGGAGAA 3540

exon 2

3541 CCAACGATCGTATCAGCTGATGCTGGACTTAATAGATTTCATATTACAAAACGAAGGAAGG 3600

3601 CTCTTTGAATGTAGTTATCCTAGAAGTATAGGTGGGATTCTTGGGAAATGGTCGATGCTT 3660

3661 GTTCTTGTTGGTGACATGCATAGAGATATGAGAAGTATCTCGCTTAACTTCTTAAGTCAC 3720

3721 GCACGTCTTAGAACTATTCTACTTAAAGATGTTGAGAGACATACTTTGTTTGTCTTGAT 3780

3781 TCTTGGCAACAAAACCTCTATTTTCTCTGCTCAAGACGAGGCCAAAAAGGTTTTTATTTTT 3840

3841 ATCTTTTATTTTGCTAAATTTTTTGTGTTATGAATCTTTAGAGTTTCTAACTTTTTTTT 3900

3901 TTTAATTGAACAGTTTACGTTTAATCTAATGGCGAAGCATATAATGAGTATGGATCCTGG 3960

3961 AGAAGAAGAAACAGAGCAATTAAAGAAAGAGTATGTAACTTTCATGAAAGGAGTTGTCTC 4020

4021 TGCTCCTCTAAATCTACCAGGAACTGCTTATCATAAAGCTCTTCAGGTACATTTATTTTT 4080

4081 TTTTGCTGTAAAGTCACAACTCTCATTATAGGTTTTTAATTTTATTTTATGTGTAAAT 4140

4141 AAAATATCTAAAATGGTTGTGTAGTCACGAGCAACGATATTGAAGTTCATTGAGAGGAAA 4200

4201 ATGGAAGAGAGAAAATTGGATATCAAGGAAGAAGATCAAGAAGAAGAAGTGAAAACA 4260

FIG 10D

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261 GAGGATGAAGCAGAGATGAGTAAGAGTGATCATGTTAGGAAACAAAGAACAGACGATGAT 4320
4321 CTTTGGGATGGGTTTTGAAACATTCGAATTTATCGACGGAGCAAATTCTCGATCTCATT 4380
4381 CTTAGTTTGTTATTTGCCGGACATGAGAcTTCTTCTGTAGCCATTGCTCTCGCTATCTTC 4440
4441 TTCTTGCAAGCTTGCCCTAAAGCCGTTGAAGAGCTTAGGGTAAGATAATTATAACAGCAC 4500
4501 AAGTTAATTACTACCAAATTGTTACGTATTATATAAGTTATTATAGAATTATTCTATTAG 4560
4561 AATATACGATGAAAAAAGTATGTATATTTAATTGTCACATAATTTTATGTTTATTGATTTA 4620
4621 TACTTTTGAAGGAAGAGCATCTTGAGATCgCGAGGGCCAAGAAGGAACTAGGAGAGTCAG 4680
4681 AATTAAATTGGGATGATTACAAGAAAATGGACTTTACTCAATGTGTATGTTACTATCATT 4740
4741 CTCATTATTTATTCTATGTTTCATATGATTTATGATGAAACCAAAATTATTGATTTTTTTT 4800
4801 TTGGTGTGTGTGAAGGTTATAAATGAACTCTTCGATTGGGAAATGTAGTTAGGTTTTTG 4860
4861 CATCGCAAAGCACTCAAAGATGTTCGGTACAAAGGTAAACTTTACGTACAAAATTTTAA 4920
4921 AATAATGAAATCCGGAATATTGAAATCTTATTGGATGAAAAATATTAATAATTACAT 4980
4981 TTCTTAATGTTGGAAAAAAGGATACGATATCCCTAGTGGGTGGAAAGTGTTACCGGTGAT 5040
5041 CTCAGCCGTACATTTGGATAATTCTCGTTATGACCAACCTAATCTCTTTAATCCTTGGAG 5100
5101 ATGGCAACAGGTAAATAAAAAGTTTCTCTCGTTAACTATCGAAAATTAGTGTATAGTTTT 5160
5161 TTCATCTATTGCATGAATAGATACGTCCTACGTGATTTACCTATCTATAGATACTATACG 5220
5221 AGAACTATTAATCTGGCAAAAACCTTTTATTATTATTATCTTTCAAGTTAGATCTTAACA 5280
5281 CGTCATGGATCATTGATCACATGAAAGCATATAAATTAATAAATAAGAGAGAGAAAGAGAC 5340

FIG 10E



5341 GTGTTGGTGTAAGTGTACGTGAAGACAATTAATTAGTAGGATGGTATGTCTTTAATGACG 5400
5401 TAGGAGCTGCCTAAATATTCTTATAATCGTGACCGTTGATTTATTATTAGTCACGGCTTT 5460
5461 GATACAATTTAAGATTTGACGGACGATGGTACCACGGCTTTGACGGATCTCACACGCCCG 5520
5521 ATGACTTGTACGTGCGTTAGATTCTGCCACGTTGACTGGTTTTAATACTTAGATTTATAA 5580
5581 CTCTATTAATTATAACAACATCAAAATCGGCGAATTAGAGAAATATACTATATAGTATTA 5640
5641 TTATGATTATTATGAGATAATACTTTATGAAATAAGATAATAATGGTAGTCATGATGTTA 5700
5701 TAGTGAGTGGGGAAGGTAAGAGGTGGTGAGAGATGATTAATGACCCACGTGGTGTGGTG 5760
5761 CCAACAAGCACGTGTTCTTCTTCCTTTTTCTTCCCAACTTCTTTTTTTGGGGGTTTATT 5820
5821 GTGATTTATAAAATCGGTTTGTGCTTTTTTTTTGTGACGAGCAGCAAAACAACGGAGCGT 5880
exon 8
5881 CATCGTCAGGAAGTGGTAGTTTTTCGACGTGGGGAAACAACACTACATGCCGTTTGGAGGAG 5940
5941 GGCCAAGGCTATGTGCTGGTTCAGAGCTAGCCAAGTTAGAAATGGCAGTGTTTATTCATC 6000
6001 ATCTAGTTCCTTAAATTCAATTGGGAATTAGCAGAAGATGATCAACCATTGCTTTTCCTT 6060
6061 TTGTTGATTTTCCTAACGGTTTGCCTATTAGGGTTTCTCGTATTCTGTAAAAAAAAAAAAA 6120
6121 AGATGAAAGTATTTTTATTCTCTCTTTTTTTTTTGATAATTTAAATCATTTTTTTTGC 6180
6181 CCAATGATATATAAAAATTTGGATAAATAATATTATTGGATATTCGTTTTTTAGTTCGGG 6240
6241 TTTGAGAAAAGGGTTTCGACTTTCGAAAGTGGACGATGTATATAGATTGGGAGCTAGGTT 6300
6301 GAGTCTTTGGACATTTGTATTGGATGTTGTTGATTATTAGTGTCGACACTATTAAACCTT 6360
6361 AAATGGGCTTTCTATAAGGCCCAATTATATTACGATTATAACAAAGTGACAACTTTTACT 6420

FIG 10F

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6421 TCGTTTTTGATCCGAAGCAATAACAAATTGTCAAATACCAAACACAAGAATTATGTAAAC 6480

6481 ACTCGTGTGTGTCTAGTGGGAAATCATTGGGCTGGAGACTGAACATCAGAACACAAGAAA 6540

6541 CCTGTCAATTATGGATACACCTCCTATGACGGTTTCCAACTTTATCTTGATTCTTATCG 6600

6601 TGTTACATTGACACAAAGAGTTAGGTGTCAAAAGGACTAAATGAATAACAATAGCTCTCA 6660

6661 GGATAAGAAGGTTCATAAAATGGTTTCTTTATTTTGAGAAGAAAGAGAGAGGAGCTTTTA 6720

6721 CTGTTTCTTGGGTCCTATTCCTTTAAATGAGAGGGTTTCGTTTTTACTTCTTCTATCTCA 6780

6781 TCATCTTTAGGATCCTCTTCTAGACGAGTAAAGTAATCCTCGTTACCAAGCAATGGTCTC 6840

6841 ATCTTTTGAAGACAGGTCTTTTCCAAGTCCTAGTTCAGGCCAAAGCTT 6888

FIG 10G

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1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308</
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FIG. 11

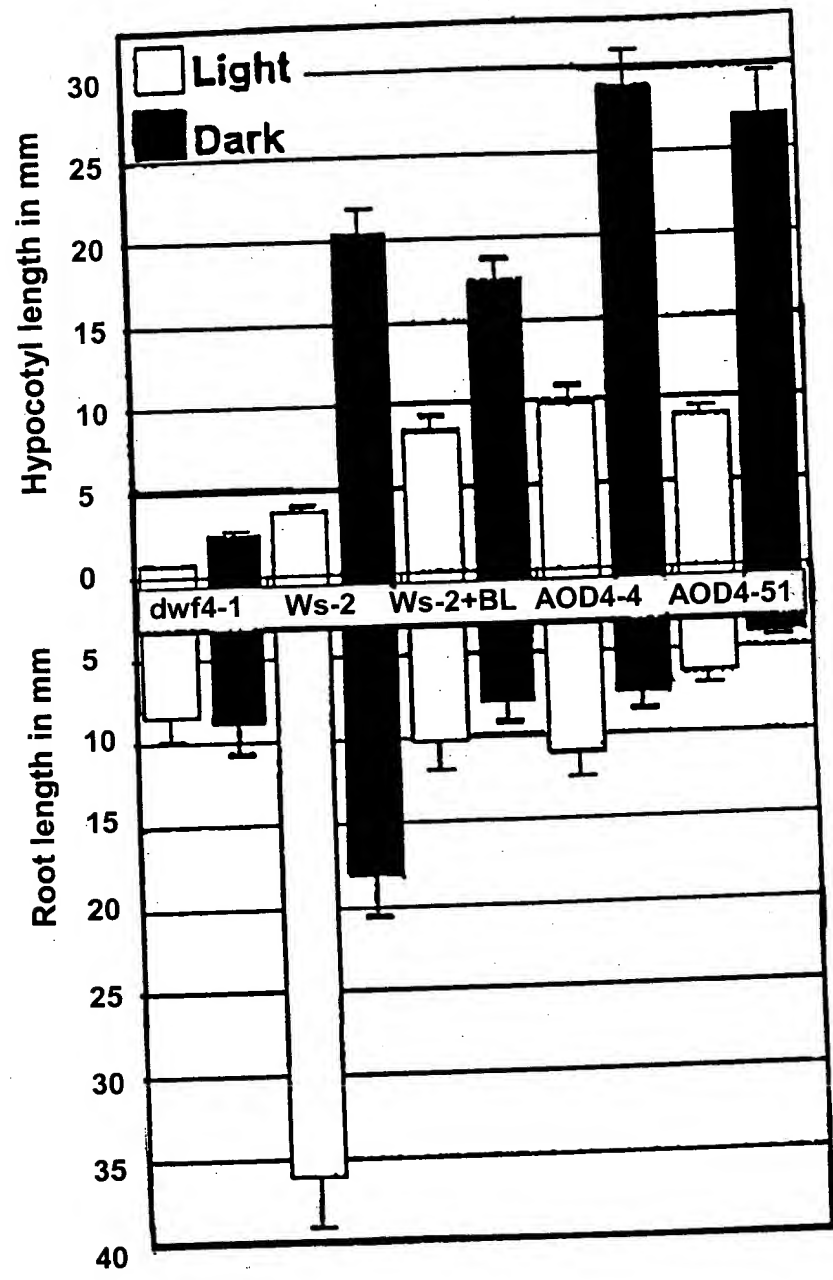


FIG. 12

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